

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-5. (Canceled)

6. (Previously presented) An image forming apparatus comprising:

an image bearing member on which a latent image is formed;

a plurality of developing devices for developing said latent image, each of said developing devices containing developer;

a turnable turning member on which said plurality of developing devices are mounted, wherein said turning member is caused to turn based on a turn history of said turning member;

an image formed by developing said latent image is output by being transferred onto a medium;

said turn history is a history value according to a number of said medium that has been output, and a number of times of turns of said turning member;

a detector for detecting the turn of said turning member; a counter for counting the output of said detector; and

the number of times of turns of said turning member is a number counted by said counter.

7. (Previously presented) An image forming apparatus comprising:

an image bearing member on which a latent image is formed;

a plurality of developing devices for developing said latent image, each of said developing devices containing developer;

a turnable turning member on which said plurality of developing devices are mounted,

wherein said turning member is caused to turn based on a turn history of said turning member;

an image formed by developing said latent image is output by being transferred onto a medium;

said turn history is a history value according to

a number of said medium that has been output, and

a number of times of turns of said turning member;

output of said image on said medium is executed according to an output command; and

the number of times of turns of said turning member is estimated according to said output command.

8. (Original) An image forming apparatus according to claim 7, wherein:
the estimation is executed every time said medium is output.

9. (Original) An image forming apparatus according to claim 7, wherein:
the estimation is executed every time a predetermined number of said medium is output.

10. (Original) An image forming apparatus according to claim 7, wherein:
the estimation is executed for every output job by which said medium is output.

11. (Original) An image forming apparatus according to claim 10, wherein:
said estimation is executed every time a predetermined number of said medium is output according to said output job using a certain one of said developing devices without said turning member being turned.

12. (Original) An image forming apparatus according to claim 11, wherein:
said plurality of developing devices each contains developer of a different color including black; and

said certain one of developing devices is the developing device containing the black developer.

13. (Previously presented) An image forming apparatus comprising:
an image bearing member on which a latent image is formed;
a plurality of developing devices for developing said latent image, each of said developing devices containing developer;
a turnable turning member on which said plurality of developing devices are mounted, wherein said turning member is caused to turn based on a turn history of said turning member;
an image formed by developing said latent image is output by being transferred onto a medium;
said turn history is a history value according to
a number of said medium that has been output, and
a number of times of turns of said turning member;
said history value is a turn value that indicates a ratio between
said number of said medium that has been output, and
said number of times of turns of said turning member.

14. (Original) An image forming apparatus according to claim 13, wherein:
said turning member is caused to turn when said turn value is smaller than a preset reference value as a result of comparison between said turn value and said reference value.

15. (Previously presented) An image forming apparatus comprising:
an image bearing member on which a latent image is formed;
a plurality of developing devices for developing said latent image, each of said developing devices containing developer;
a turnable turning member on which said plurality of developing devices are mounted,

wherein said turning member is caused to turn based on a turn history of said turning member;

an image formed by developing said latent image is output by being transferred onto a medium;

said turn history is a history value according to

a number of said medium that has been output, and

a number of times of turns of said turning member;

said turning member is caused to turn every time a predetermined number of said medium is output.

16. (Original) An image forming apparatus according to claim 14, wherein:

said image forming apparatus comprises a storage element capable of storing various kinds of information; and

said reference value is changeable according to said information in said storage element.

17. (Original) An image forming apparatus according to claim 16, wherein:

said information is about a remaining amount of said developer contained in a container provided in each of said developing devices.

18. (Original) An image forming apparatus according to claim 16, wherein:

said information is about an amount of said medium that is output using each of said developing devices.

19. (Original) An image forming apparatus according to claim 16, wherein:

said storage element is provided in/on each of said developing devices.

20. (Original) An image forming apparatus comprising:

an image bearing member on which a latent image is formed;

a plurality of developing devices for developing said latent image, each of said developing devices containing developer; and

a turnable turning member on which said plurality of developing devices are mounted, wherein:

each of said developing devices has two developer containers that contain said developer when the developing device is positioned in a developing position for developing said latent image;

one of said two developer containers has a developer supplying section for supplying said developer to said image bearing member;

said developer supplying section of each said developing device is at a lower portion of that developing device when that developing device is positioned in said developing position;

said developing device has a storage element capable of storing information about a remaining amount of said developer contained in said container, and information about an amount of medium that is output using each of said developing devices;

each of said developing devices does not have a stirring member for stirring said developer;

an image formed by developing said latent image is output by being transferred onto said medium;

said turning member is caused to turn every time a predetermined number of said medium is output;

said image forming apparatus further comprises

a detector for detecting the turn of said turning member, and

a counter for counting the output of said detector; and

said turning member is caused to turn to mix said developer contained in each of said two developer containers when a turn value that indicates a ratio between

the number of said medium that has been output, and

said number counted by said counter

is smaller than a preset reference value that is changeable according to said information in said storage element as a result of comparison between said turn value and said reference value.

21. (Withdrawn) An image forming apparatus comprising:
an image bearing member on which a latent image is formed;
a plurality of developing devices for developing said latent image, each of said developing devices containing developer; and
a turnable turning member on which said plurality of developing devices are mounted, wherein, according to an output command, said image forming apparatus outputs an image formed by developing said latent image by transferring said image onto a medium; and wherein said turning member is caused to turn at least either at the beginning or the end of an output job for outputting said medium.

22-24. (Canceled)

25. (Withdrawn) A computer-readable storage medium having recorded thereon a program for making
an image forming apparatus comprising:
an image bearing member on which a latent image is formed;
a plurality of developing devices for developing said latent image, each of said developing devices containing developer; and
a turnable turning member on which said plurality of developing devices are mounted; said image forming apparatus outputting, according to an output command, an image formed by developing said latent image by transferring said image onto a medium, achieve a function of causing said turning member to turn at least either at the beginning or the end of an output job for outputting said medium.

26. (Withdrawn) A computer system comprising:
an image forming apparatus having:
an image bearing member on which a latent image is formed;
a plurality of developing devices for developing said latent image, each of said developing devices containing developer; and
a turnable turning member on which said plurality of developing devices are mounted,
wherein, according to an output command, said image forming apparatus outputs an image formed by developing said latent image by transferring said image onto a medium; and
wherein said turning member is caused to turn at least either at the beginning or the end of an output job for outputting said medium.

27. (Withdrawn) A method for forming an image with an image forming apparatus having:
an image bearing member on which a latent image is formed;
a plurality of developing devices for developing said latent image, each of said developing devices containing developer; and
a turnable turning member on which said plurality of developing devices are mounted;
said image forming apparatus outputting, according to an output command, an image formed by developing said latent image by transferring said image onto a medium,
said method comprising the step of:
causing said turning member to turn at least either at the beginning or the end of an output job for outputting said medium.

28. (Withdrawn) A color image forming apparatus comprising:
a plurality of developing devices, each of said developing devices
containing developer that includes a predetermined ratio in volume of developer particles having a diameter of a predetermined value or less, and
being capable of developing a latent image using said developer contained therein,

wherein said image forming apparatus forms a color image by performing development successively with each of said plurality of developing devices to superimpose different kinds of said developer;

wherein said plurality of developing devices include
a first developing device whose said ratio in volume of said developer particles is R1, and
a second developing device whose said ratio in volume of said developer particles is R2;
and

wherein said first developing device and said second developing device satisfy all of the following conditions (1) through (3):

- (1) the order in which said first developing device and said second developing device perform development is other than first in order;
- (2) said second developing device performs development later than said first developing device; and
- (3) R1 is larger than R2.

29. (Withdrawn) A color image forming apparatus according to claim 28, wherein:

the developing devices, among said plurality of developing devices other than the developing device that performs development first, perform development according to an order in which a developing device having a smaller said ratio in volume performs development later in order.

30. (Withdrawn) A color image forming apparatus according to claim 28, wherein:
said predetermined value is 5 μm .

31. (Withdrawn) A color image forming apparatus according to claim 28, wherein:

said ratio in volume for the developing device that performs development first among said plurality of developing devices is larger than said ratio in volume for each of the other developing devices.

32. (Withdrawn) A color image forming apparatus according to claim 28, wherein:
said developer includes conductive metal oxide as an external additive.

33. (Withdrawn) A color image forming apparatus according to claim 28, wherein:
when assuming that a charge amount of said developer contained in said first developing
device is E1, and a charge amount of said developer contained in said second developing device
is E2,
E1 is larger than E2.

34. (Withdrawn) A color image forming apparatus according to claim 33, wherein:
said developer includes
a core particle, and
conductive metal oxide as an external additive associated on said core particle; and
when assuming that an amount of said external additive of the developer in said first
developing device is A1, and an amount of said external additive of the developer in said second
developing device is A2,
A1 is larger than A2.

35. (Withdrawn) A color image forming apparatus according to claim 33, wherein:
said developer includes
a core particle, and
conductive metal oxide as an external additive associated on said core particle; and
when assuming that a charge amount of said core particle of the developer in said first
developing device is M1, and a charge amount of said core particle of the developer in said
second developing device is M2,
M1 is larger than M2.

36. (Withdrawn) A color image forming apparatus according to claim 28, wherein:
a volume average particle diameter of the developer in said first developing device is equal to a volume average particle diameter of the developer in said second developing device.

37. (Withdrawn) A color image forming apparatus according to claim 28, further comprising:

an image bearing member for bearing said latent image; and
a transferring medium that serves as a medium when transferring a developer image made visible on said image bearing member onto a transferring material,
wherein said image forming apparatus forms said color image by performing an operation of
making said latent image bore on said image bearing member visible as said developer image using each of said developing devices,
placing said image bearing member and said transferring medium in contact with each other, and
transferring said developer image onto said transferring medium
successively with each of said plurality of developing devices to superimpose different kinds of said developer onto said transferring medium.

38. (Withdrawn) A color image forming apparatus comprising:
a plurality of developing devices, each of said developing devices
containing developer that includes a predetermined ratio in volume of developer particles having a diameter of a predetermined value or less, and
being capable of developing a latent image using said developer contained therein,
wherein:
said image forming apparatus forms a color image by performing development successively with each of said plurality of developing devices to superimpose different kinds of said developer;

said plurality of developing devices include

a first developing device whose said ratio in volume of said developer particles is R1, and

a second developing device whose said ratio in volume of said developer particles is R2;

said first developing device and said second developing device satisfy all of the following conditions (1) through (3):

(1) the order in which said first developing device and said second developing device perform development is other than first in order;

(2) said second developing device performs development later than said first developing device; and

(3) R1 is larger than R2;

the developing devices, among said plurality of developing devices other than the developing device that performs development first, perform development according to an order in which a developing device having a smaller said ratio in volume performs development later in order;

said predetermined value is 5 μm ;

said ratio in volume for the developing device that performs development first among said plurality of developing devices is larger than said ratio in volume for each of the other developing devices;

when assuming that a charge amount of said developer contained in said first developing device is E1, and a charge amount of said developer contained in said second developing device is E2, E1 is larger than E2;

said developer includes

a core particle, and

conductive metal oxide as an external additive associated on said core particle;

when assuming that an amount of said external additive of the developer in said first developing device is A1, and an amount of said external additive of the developer in said second developing device is A2, A1 is larger than A2;

when assuming that a charge amount of said core particle of the developer in said first developing device is M1, and a charge amount of said core particle of the developer in said second developing device is M2, M1 is larger than M2;

a volume average particle diameter of the developer in said first developing device is equal to a volume average particle diameter of the developer in said second developing device;

said image forming apparatus further comprises:

an image bearing member for bearing said latent image; and

a transferring medium that serves as a medium when transferring a developer image made visible on said image bearing member onto a transferring material; and

said image forming apparatus forms said color image by performing an operation of

making said latent image bore on said image bearing member visible as said developer image using each of said developing devices,

placing said image bearing member and said transferring medium in contact with each other, and

transferring said developer image onto said transferring medium

successively with each of said plurality of developing devices to superimpose different kinds of said developer onto said transferring medium.

39. (Withdrawn) A method of forming a color image comprising:

a step of performing development successively with each of a plurality of developing devices to superimpose different kinds of developer to form a color image, each of said developing devices

containing developer that includes a predetermined ratio in volume of developer particles having a diameter of at most a predetermined value, and

being capable of developing a latent image using said developer contained therein,

wherein said plurality of developing devices include

a first developing device whose said ratio in volume of said developer particles is R1, and

a second developing device whose said ratio in volume of said developer particles is R2;
and

wherein said first developing device and said second developing device satisfy all of the following conditions (1) through (3):

(1) the order in which said first developing device and said second developing device perform development is other than first in order;

(2) said second developing device performs development later than said first developing device; and

(3) R1 is larger than R2.

40. (Withdrawn) A computer system comprising:

a computer;

a display device that is connectable to said computer; and

a color image forming apparatus that is connectable to said computer and that has a plurality of developing devices, each of said developing devices

containing developer that includes a predetermined ratio in volume of developer particles having a diameter of a predetermined value or less, and

being capable of developing a latent image using said developer contained therein;

said image forming apparatus forming a color image by performing development successively with each of said plurality of developing devices to superimpose different kinds of said developer;

said plurality of developing devices including

a first developing device whose said ratio in volume of said developer particles is R1, and

a second developing device whose said ratio in volume of said developer particles is R2;

and

said first developing device and said second developing device satisfying all of the following conditions (1) through (3):

(1) the order in which said first developing device and said second developing device perform development is other than first in order;

(2) said second developing device performs development later than said first developing device; and

(3) R1 is larger than R2.

41. (Withdrawn) A color image forming apparatus comprising:
an image bearing member for bearing a latent image;
a plurality of developing devices, each of said developing devices
containing developer that includes a predetermined ratio in volume of developer particles
having a diameter of a predetermined value or less, and
being capable of developing said latent image using said developer contained therein; and
a transferring medium that serves as a medium when transferring the developer on said
image bearing member onto a transferring material,
wherein said image forming apparatus forms a color image by performing an operation of
developing said latent image bore on said image bearing member with said developer
using each of said developing devices, and
transferring the developer on said image bearing member onto said transferring medium
in a state in which said image bearing member and said transferring medium are in contact with
each other

successively with each of said plurality of developing devices to superimpose different
kinds of said developer onto said transferring medium;

wherein said plurality of developing devices include

a first developing device whose said ratio in volume of said developer particles is R1, and
a second developing device whose said ratio in volume of said developer particles is R2;

and

wherein said first developing device and said second developing device satisfy both of
the following conditions (1) and (2):

(1) said second developing device performs development later than said first developing device; and

(2) R2 is larger than R1.

42. (Withdrawn) A color image forming apparatus according to claim 41, wherein:

said plurality of developing devices perform development according to an order in which a developing device having a smaller said ratio in volume performs development earlier in order.

43. (Withdrawn) A color image forming apparatus according to claim 42, wherein:

among said plurality of developing devices, the developing device performing development first in order contains yellow developer.

44. (Withdrawn) A color image forming apparatus according to claim 42, wherein:

among said plurality of developing devices, the developing device performing development last in order contains black developer.

45. (Withdrawn) A color image forming apparatus according to claim 41, wherein:

said predetermined value is 5 μm .

46. (Withdrawn) A color image forming apparatus according to claim 41, wherein:

a coefficient of static friction of the surface of said image bearing member is larger than a coefficient of static friction of the surface of said transferring medium.

47. (Withdrawn) A color image forming apparatus according to claim 41, wherein:

said developer includes conductive metal oxide as an external additive.

48. (Withdrawn) A color image forming apparatus according to claim 41, wherein:
when assuming that a charge amount of said developer contained in said first developing device is E1, and a charge amount of said developer contained in said second developing device is E2,

E2 is larger than E1.

49. (Withdrawn) A color image forming apparatus according to claim 48, wherein:
said developer includes
a core particle, and
conductive metal oxide as an external additive associated on said core particle; and
when assuming that an amount of said external additive of the developer in said first developing device is A1, and an amount of said external additive of the developer in said second developing device is A2,

A2 is larger than A1.

50. (Withdrawn) A color image forming apparatus according to claim 48, wherein:
said developer includes
a core particle, and
conductive metal oxide as an external additive associated on said core particle; and
when assuming that a charge amount of said core particle of the developer in said first developing device is M1, and a charge amount of said core particle of the developer in said second developing device is M2,

M2 is larger than M1.

51. (Withdrawn) A color image forming apparatus according to claim 41, wherein:
a volume average particle diameter of the developer in said first developing device is equal to a volume average particle diameter of the developer in said second developing device.

52. (Withdrawn) A color image forming apparatus comprising:
an image bearing member for bearing a latent image;
a plurality of developing devices, each of said developing devices
containing developer that includes a predetermined ratio in volume of developer particles
having a diameter of a predetermined value or less, and
being capable of developing said latent image using said developer contained therein; and
a transferring medium that serves as a medium when transferring the developer on said
image bearing member onto a transferring material, wherein:
said image forming apparatus forms a color image by performing an operation of
developing said latent image bore on said image bearing member with said developer
using each of said developing devices, and
transferring the developer on said image bearing member onto said transferring medium
in a state in which said image bearing member and said transferring medium are in contact with
each other
successively with each of said plurality of developing devices to superimpose different
kinds of said developer onto said transferring medium;
said plurality of developing devices include
a first developing device whose said ratio in volume of said developer particles is R1, and
a second developing device whose said ratio in volume of said developer particles is R2;
said first developing device and said second developing device satisfy both of the
following conditions (1) and (2):
(1) said second developing device performs development later than said first
developing device; and
(2) R2 is larger than R1;
said plurality of developing devices perform development according to an order in which
a developing device having a smaller said ratio in volume performs development earlier in order;
among said plurality of developing devices, the developing device performing
development first in order contains yellow developer;

among said plurality of developing devices, the developing device performing development last in order contains black developer;

said predetermined value is 5 μ m;

a coefficient of static friction of the surface of said image bearing member is larger than a coefficient of static friction of the surface of said transferring medium;

when assuming that a charge amount of said developer contained in said first developing device is E1, and a charge amount of said developer contained in said second developing device is E2, E2 is larger than E1;

said developer includes

a core particle, and

conductive metal oxide as an external additive associated on said core particle;

when assuming that an amount of said external additive of the developer in said first developing device is A1, and an amount of said external additive of the developer in said second developing device is A2, A2 is larger than A1;

when assuming that a charge amount of said core particle of the developer in said first developing device is M1, and a charge amount of said core particle of the developer in said second developing device is M2, M2 is larger than M1; and

a volume average particle diameter of the developer in said first developing device is equal to a volume average particle diameter of the developer in said second developing device.

53. (Withdrawn) A method for forming a color image with a color image forming apparatus having:

an image bearing member for bearing a latent image;

a plurality of developing devices, each of said developing devices

containing developer that includes a predetermined ratio in volume of developer particles having a diameter of a predetermined value or less, and

being capable of developing said latent image using said developer contained therein; and

a transferring medium that serves as a medium when transferring the developer on said image bearing member onto a transferring material,

wherein said plurality of developing devices includes

a first developing device whose said ratio in volume of said developer particles is R1, and

a second developing device whose said ratio in volume of said developer particles is R2,

and

wherein said first developing device and said second developing device satisfy both of the following conditions (1) and (2):

(1) said second developing device performs development later than said first developing device; and

(2) R2 is larger than R1,

said method comprising the step of:

performing an operation of

developing said latent image bore on said image bearing member with said developer using each of said developing devices, and

transferring the developer on said image bearing member onto said transferring medium in a state in which said image bearing member and said transferring medium are in contact with each other

successively with each of said plurality of developing devices to superimpose different kinds of said developer onto said transferring medium.

54. (Withdrawn) A computer system comprising:

a computer;

a display device that is connectable to said computer; and

a color image forming apparatus that is connectable to said computer and that has:

an image bearing member for bearing a latent image;

a plurality of developing devices, each of said developing devices

containing developer that includes a predetermined ratio in volume of developer particles having a diameter of a predetermined value or less, and

being capable of developing said latent image using said developer contained therein; and
a transferring medium that serves as a medium when transferring the developer on said image bearing member onto a transferring material,

said image forming apparatus forming a color image by performing an operation of
developing said latent image bore on said image bearing member with said developer using each of said developing devices, and

transferring the developer on said image bearing member onto said transferring medium in a state in which said image bearing member and said transferring medium are in contact with each other

successively with each of said plurality of developing devices to superimpose different kinds of said developer onto said transferring medium;

said plurality of developing devices including

a first developing device whose said ratio in volume of said developer particles is R_1 , and

a second developing device whose said ratio in volume of said developer particles is R_2 ;

and

said first developing device and said second developing device satisfying both of the following conditions (1) and (2):

(1) said second developing device performs development later than said first developing device; and

(2) R_2 is larger than R_1 .

55. (Currently Amended) An image forming apparatus according to any one of claims 1, 6, 7, 13, 15, or 20,

wherein, according to an output command, said image forming apparatus outputs an image formed by developing said latent image by transferring said image onto a medium, and

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wherein said turning member is caused to turn at least either at the beginning or the end of an output job for outputting said medium.

56. (Canceled)